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ABSTRACT

A description is given of the development, implementation, and evaluation of the Curriculum Management System (CMS), a computer managed system that utilizes input from research findings on effective schools. The goals and objectives of instruction are clearly delineated and effectively communicated to students and their parents. Each student, teacher, and parent receives a computer generated plan of study every 2 weeks which specifies the goals, objectives, and learning activities to be used with each student. Each plan of study is individualized to accommodate the student's developmental level as determined by criterion referenced tests. As the scores of the criterion referenced tests are entered into the CMS, the system automatically builds a plan of study. The CMS encourages high expectations for student achievement and makes it reasonable to have high expectations because each student is working on mastering content which is at the appropriate level. Parents receive highly detailed computer generated reports every 2 weeks informing them of the student's progress. Teachers are enabled to identify objectives which have or have not been mastered at an acceptable level for each student. (JD)

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CURRICULUM MANAGEMENT SYSTEM:

A COMPUTER MANAGED CURRICULUM

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Introduction

American students are not learning basic skills at an acceptable level. According to a survey conducted by the National Science Foundation and the United States Department of Education, American teenagers scored in last place when compared to similar students from five other industrialized nations. The United States cannot afford the consequences of becoming a second-rate economic power because of ineffective educational programs. Institutions of education must find ways to assist all students in mastering basic skills at an acceptable level.

Many American educators were pessimistic in the sixties and seventies about the potential of American schools to influence student achievement. The Coleman Report (1966) and Inequality: A Reassessment of Family and Schooling in America by Christopher Jencks (1972), both indicated that factors such as family background, socioeconomic status, peer group influences and location of schools were more significant in determining school achievement than factors such as instructional strategies. These studies were followed by other equally pessimistic findings such as the Averch, Carroll, Donaldson, Kiesting and Pincus study (1974) which reviewed the effects of a variety of programs designed to improve academic achievement. This review indicated that none of the intervention strategies examined were so successful that they could be used to guide national policy for improving the academic achievement of the nation's students.

Most educators would not deny that factors identified in the Coleman Report and other similar studies do influence school achievement. However, many other researchers have conducted studies which support the contention that factors such as

teaching practices do affect school achievement dramatically.

Reseachers such as Bickel (1983), Brookover (1981), and Clark and McCarthy (1983) have supported this belief. These researchers found that when schools with similar demographics were compared some of those schools were effective in assisting students in improving their academic achievement while others were not. These findings tend to negate the belief that schools cannot modify the impact of societal factors in determining academic achievement.

These researchers have found several school factors which influence student achievement including but not limited to:

1. Clear school goals that are understood by all school personnel and students;
2. High expectation for student achievement;
3. Basic skills being emphasized; and
4. Student progress being continuously monitored.

Since these factors have been indentified, it seems reasonable that teachers should be provided assistance in implementing these characteristics in the teaching/learning process.

Technology can provide assistance to teachers in their attempt to implement these effective schooling characteristics in the classroom. The Curriculum Management System (CMS) is one method of using technology to assist teachers in this quest. The CMS is a computer managed curriculum system that can assist schools in helping students improve their academic performance.

History

Nine years ago the faculty of East Central University (ECU) in Ada, Oklahoma, was contacted by the Indianola Public Schools (IPS) in Indianola, Oklahoma, to provide assistance in the development of a curriculum management system. Personnel of the IPS were concerned with finding an innovative way of managing the curriculum. Specifically, IPS wanted to develop a curriculum management system that would do the following:

1. assist teachers in determining the appropriate placement of students in a curricular area;
2. build individual plans of study for students in the curricular sequence;
3. identify or develop teaching materials for students to use as they progress through the curriculum;
4. evaluate the effectiveness of those teaching materials based upon teacher rating and student performance;
5. build detailed reports to parents of student progress at frequent intervals;
6. identify those elements of the curriculum that are being effectively mastered by students and those elements of the curriculum that are not being adequately mastered; and
7. provide a means by which the curriculum can be analyzed for the purpose of improving the scope and sequence of the curriculum.

During the past nine years this project has been developed. This was accomplished by melding the Frymier Annehurst Curriculum Classification System (ACCS) with the Goals Based Educational Management Systems (GEMS), a federally funded and validated project. The ACCS taxonomy detailing the scope and sequence

of the mathematics content to be learned was entered into the CMS, a computer program designed to manage and monitor the curriculum. Learning activities for each of the content elements were drawn from GEMS, classified on the basis of content to be learned in accord with ACCS and entered into the CMS. Thus, every element of the content in the mathematics curriculum and every corresponding activity is contained in the CMS. Further, the activities can be coded by learning modalities, using the ACCS system, thus allowing activities which address a student's individual learning style to be selected for the student's plan of study . The learning modality component has not been completed, but will be in the near future.

Currently, the CMS is operational in all areas described other than its learning modality component. Students are tested using criterion referenced tests to determine their placement in the scope and sequence of the curriculum. Test results for each student are then entered into the CMS. Based upon these test results, the CMS will generate an individualized plan of study for each student at the student's developmental level. The plans of study detailing the objectives to be met and the activities to be done are provided to teachers, parents and students.

Currently, the plans of study are generated for two-week intervals of study. At the end of each two-week interval, students are tested again using criterion referenced tests and test results are entered into the CMS. Upon command, the CMS will produce reports to teachers and parents detailing student performance on each activity attempted. The test results also provide the basis for each student's next plan of study.

Additionally, test results provide a mechanism by which learning activities may be evaluated. The CMS can, upon command, evaluate the effectiveness of all learning activities used in the program upon command from the following two perspectives:

1. teacher rating; and
2. student performance on the criterion referenced tests.

As learning activities are classified by learning modality, the CMS has the ability to evaluate the effectiveness of those activities in addressing students' specific learning styles. Based upon this information, educators will be able to determine which activities to maintain in general CMS files and which to maintain under a specific learning modality classification.

A powerful subroutine of the CMS is the evaluation of student achievement based upon objective attainment. The CMS will analyze student achievement and build reports detailing which objectives have and have not been mastered at an acceptable level. This report can be generated for one student, one grade, or for an entire school. An analysis of the report can provide the basis for determining inservice needs of one or a group of the school's faculty. Additionally, the report indicates problem areas of the curriculum which might be remediated by altering the activities contained in the CMS files.

The structure and capabilities of the CMS enable public school and university faculty to collaborate in increasing the knowledge base of mathematics and pedagogy. Upon the request of public school teachers, the CMS allows for data files of student performance, both individually and collectively, to be monitored at university sites.

Confidentiality of individual teachers and students is maintained by modem transmission of data that includes teachers' and students' ID numbers rather than names. By using shared data banks, university and public school faculty can collaborate in the remediation of any curricular problems.

The shared data banks also facilitate research undertaken by university and/or public school faculty. Research on altered sequencing of mathematics, for example, can be conducted to determine the optimum sequencing of mathematics content. The results of such research can then be used to alter the scope and sequence of the mathematics curriculum contained in the CMS.

Only the mathematics and reading programs for grades K-8 are currently on line. These curricular areas will be expanded to include grades 9-12 in future years. Provisions also have been made to include science and social studies. When this is accomplished, the following goals can be met: 1) monitoring and managing each student's progress throughout the curriculum by providing individualized plans of study; 2) reporting detailed information to parents; 3) evaluating the quality of teaching materials; and 4) developing a systematic process for restructuring the curriculum.

The development of this project provides an exceptional opportunity to improve instruction. When curricular problems are identified and remediated quickly, students' performance will improve. As the curriculum is studied and improved using the CMS, student performance will improve. As students' parents are provided more and better information about their children's performance, many will provide more encouragement. As public schools and universities collaborate on solving curricular problems, student performance can be improved.

Current Status

CMS is currently being used in two school districts in Oklahoma. One of the districts is using the program to monitor and manage the mathematics curriculum for grades K-8 and is field testing the project in the reading curriculum for grades 1, 7, and 8. This district also field tested the program for grade 2 in the mathematics curriculum during the 1987-88 academic year. When the MAT 6 composite mathematics achievement test scores were compared to those same students' MAT 6 achievement test scores for the prior year, it was found that the class composite percentile scores increased 26 points. Based upon these findings the district has expanded the use of the CMS.

The second district to adopt the project is using the CMS to monitor and manage the mathematics curriculum in a middle school, Grades 5-8. This was begun in the 1989-90 academic year. At this time no data are available to indicate the success of the project beyond the second grade study previously described. A comprehensive study will be conducted during the 1990-91 academic year in an effort to further determine the effectiveness of the project.

While the CMS project is now operational, much work is left to be done. As funding becomes available the activity files can be expanded. The classification of existing activities needs to be expanded to include learning modality. When the latter is accomplished, the CMS will be able to create personalized plans of study.

During the current year the activities contained in the files will be evaluated to determine their effectiveness using the subroutine previously described. When this is accomplished, the CMS and its curricula will be significantly improved.

One other major task to be undertaken as the CMS is further implemented involves using the information contained in the CMS data files to conduct research. CMS data files will have massive amounts of information which can be used to improve curricula and pedagogy. As computer links are created between participating schools and universities, significant research will be possible.

Conclusion

Student performace can be improved with the use of the CMS due to factors found to be associated with effective schools. Specifically, the goals and objectives of instruction are clearly delineated and effectively communicated to students and their parents. Each student, teacher and parent receives a computer generated plan of study every two weeks which specifies the goals, objectives and learning activities to be used with each student. Each plan of study is individualized to accommodate the student's developmental level as determined by criterion referenced tests. As the scores of the criterion referenced tests are entered into the CMS, the system will automatically build a plan of study.

The CMS encourages high expectations for student achievement and makes it reasonable to have high expectations for student achievement because each student is working on mastering content which is at the appropriate level. As parents

understand the individualization of the project and as they receive highly detailed reports every two weeks which are computer generated, they are enabled to encourage their children to apply themselves in their academic pursuits.

The scope of the curriculum used in the CMS emphasizes basic skills. The scope and sequence of each curriculum used in the CMS are based upon the Annehurst Curriculum Classification System (ACCS) which has made provisions to insure the inclusion of basic skills in the curriculum.

Student achievement is continuously monitored by the CMS. Powerful subroutines of the CMS can allow teachers to identify which objectives have been mastered at an acceptable level as evidenced by student performance on criterion referenced tests. Conversely, the program will identify which objectives have not been mastered at an acceptable level. The CMS can generate, upon command, such reports for an individual student, a class or an entire school.

The technology developed and used in the CMS has the potential to significantly improve student achievement. CMS can assist teachers to implement the findings associated with the effective schooling research by delineating and communicating the goals and objectives of instruction, by encouraging high expectations for student achievement, by emphasizing basic skills, and by continuously monitoring student progress.

The CMS is an innovative way of monitoring and managing the curricula and has the potential to significantly improve the achievement of students. By using the technology represented by the CMS, teachers can spend more time doing what they do best. They can teach children.

Bibliography

Averch, H. A., Carroll, S. J., Donaldson, T. S., Kiesting, H. J. and Pincus, J. (1974). How effective is schooling? A critical Review. Englewood Cliffs, N. J.: Educational Technology Publications.

Bickel, W. E. (1983). Effective Schools: Knowledge, dissemination, inquiry. Educational Research, 12 (4) 3-5.

Brookover, W. D. (1981). Why do some schools succeed? The Phi Delta Kappa study of exceptional urban elementary schools. Harvard Educational Review, 51, 439-441.

Clark, J. A., and McCarthy, D. P. (1983). School improvement in New York City: The evaluation of a project. Educational Researcher, 12 (4), 17-24.

Coleman, J. S., Campbell, E., Hobson, C., McPartland, J., Mood, A., Weinfield, F., and York, R. (1966). Equality of Educational Opportunity. Washington, D.C.: U.S. Government Printing Office.

Jencks, C. S., Smith, M. S., Ackland, H., Bane, M. J., Cohen, D., Gintis, H., Heyns, B., and Michelson, S., (1972). Inequlaity: A Reassessment of Family and Schooling in America. New York: Harper and Row.